

AMENDMENTS TO THE CLAIMS

B₁ 1. (currently amended) A member for air motors in which the surface is heated at 450 to 580°C in a mixed gas atmosphere comprising 50 to 95% of hydrogen, and 5-50% of nitrogen and hydrogen sulfide,

_____ a DC voltage at 300 to 500V is applied relative to an anode

_____ disposed in a vacuum chamber under reduced pressure and a nitrosulphurization layer of about 30-300 μm is formed on the surface

_____ by using a bright nitrogen diffusion method.

2. (original) A member for air motors as defined in claim 1, wherein the nitrosulphurization layer at the uppermost surface of the member has a hardness of 800 to 1200 of Vickers hardness.

3. (original) A member for air motors as defined in claim 1, wherein the ratio between the nitrogen sulfide in the gas mixture is from 0.01 to 99 parts by volume of the hydrogen sulfide content based on 100 parts by volume of the nitrogen content.

4. (original) A member for air motors as defined in claim 1, wherein the member is one or more of the rotor,

cylinder, and front cylinder cover and the rear cylinder cover.

5. (new) A member for air motors as defined in claim 2, wherein the ratio between the nitrogen sulfide in the gas mixture is from 0.01 to 99 parts by volume of the hydrogen sulfide content based on 100 parts by volume of the nitrogen content.

6. (new) The member of claim 5, wherein said surface comprises a quenched and tempered die steel.

7. (new) The member of claim 5, wherein the inside of the vacuum chamber is evacuated to about 10^{-3} torr.

8. (new) The member of claim 7, wherein said nitrosulphurization layer is formed over 1-30 hours.

9. (new) The member according to claim 5, wherein the N_2/H_2 volume ration is 1:10 to 2:1.

10. (new) The member of claim 9 wherein the mixed gas atmosphere also contains an inert gas.

11. (new) The member of claim 10, wherein the voltage is 380-460 V, the hydrogen partial pressure is 80, the hydrogen sulfide partial pressure is 5-15, and the nitrogen partial pressure is 15-5.

12. (new) The member according to claim 11, wherein the surface is heated along a heating cycle comprising raising the temperature to about 480°C over about one hour during which evacuation is conducted with no gas supply; then maintaining said temperature of approximately 480°C in the presence of hydrogen gas without nitrogen or hydrogen sulfide; then adding nitrogen and hydrogen sulfide to provide a gas mixture of approximately 80% hydrogen, 10% nitrogen, and 10% hydrogen sulfide and applying said DC voltage; and then reducing the temperature over a period of about four hours in a nitrogen atmosphere substantially free of hydrogen and hydrogen sulfide.

13. (new) An air motor comprising a rotor (2) supported by bearings (7, 8) fitted to a front cylindrical cover (5) and a rear cylindrical cover (6) disposed about said rotor (2); a cylinder (4) disposed within said front cylindrical cover (5) and rear cylindrical cover (6) and disposed about said rotor (2) with a partial annular space (11) defined between said rotor (2) and said cylinder (4); means for feeding air to the space between the rotor (2) and the cylinder (4) and means for exhausting air from the space between the rotor (2) and the cylinder (4); and wherein at least the inner wall of said cylinder (4) comprises the member of claim 1.